

IN THE CLAIMS:

1. (Currently Amended) A solid-state contactor for an arc welder, the contactor comprising:
a ~~processor~~ controller assembly being configured to generate a logical triggering signal, the ~~processor~~ controller assembly including:
an input including:
an input stage configured to receive a logical signal indicative of a trigger being depressed;
an input stage configured to receive a signal indicative of a volume of current at a welding arc; and
an input stage configured to receive a logical signal indicative of activation of a wire feed motor;
an output; and
a processor, the processor being configured to generate the logical triggering signal at the output based upon the received signals indicative of the volume of current and of the activation of the wire feed motor; and
a switch configured to conduct electrical current from a power source to a wire conductor in response to the logical triggering signal at the output.
2. (Currently Amended) The contactor of Claim 1, ~~the processor assembly further comprising an input in communication with the processor, the processor being configured to respond to the input wherein the signal indicative of a volume of current is a logical signal indicating a volume of current exceeding a threshold current value.~~
3. (Currently Amended) The contactor of Claim 12, ~~further comprising wherein:~~

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the signal indicative of a volume of current at a welding arc is generated at a current sensor in communication with the input, the current sensor being configured to sense the electrical current flowing from the power source to the wire conductor.

4. (Currently Amended) The contactor of Claim 12, further comprising wherein:
the input includes an input stage configured to receive a signal indicative of a temperature sensor in communication with the input, the temperature sensor being configured to sense a temperature of the switch; and
the output is further based upon the signal indicative of the temperature.
5. (Currently Amended) The contactor of Claim 12, wherein the signal indicative of activation of a wire feed motor further comprising:
is generated at a wire speed sensor in communication with the input, the wire feed sensor being configured to sense a speed of the wire feed~~the temperature of the switch.~~
6. (Currently Amended) The contactor of Claim 12, wherein the switch is a transistor.
7. (Original) The contactor of Claim 6, wherein the transistor is a field effect transistor.
8. (Currently Amended) The contactor of Claim 1, wherein the logical signal is received at the switch output is configured to pulse-width modulate the electrical current flowing from the power source to the wire conductor.
9. (Currently Amended) An arc welding machine including a solid-state contactor, the contactor comprising:
a power source, the power source being configured to provide an electrical current;
a processor controller assembly being configured to generate a logical triggering signal, the processor controller assembly including:

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an input including:

an input stage configured to receive a logical signal indicative of a trigger being depressed;

an input configured to receive a signal indicative of a volume of current at a welding arc; and

an input configured to receive a logical signal indicative of activation of a wire feed motor;

an output; and

a processor, the processor being configured to generate the logical triggering signal at the output based upon the received signals indicative of the volume of current and of the activation of the wire feed motor; and

a switch configured to conduct electrical current from a power source to a wire conductor in response to the logical triggering signal at the output.

10. (Currently Amended) The welding machine of Claim 9, ~~the processor assembly further comprising an input in communication with the processor, the processor being configured to respond to the input wherein the signal indicative of a volume of current is a logical signal indicating a volume of current exceeding a threshold current value.~~

11. (Currently Amended) The welding machine of Claim 9-10, ~~further comprising wherein: the signal indicative of a volume of current at a welding arc is generated at a current sensor in communication with the input, the current sensor being configured to sense the electrical current flowing from the power source to the wire conductor.~~

12. (Currently Amended) The welding machine of Claim 9-10, ~~further comprising wherein:~~

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701 Fifth Avenue, Suite 4800
Seattle, Washington 98104
206.381.3300 • F: 206.381.3301

the input includes an input stage configured to receive a signal indicative of a temperature sensor in communication with the input, the temperature sensor being configured to sense a temperature of the switch; and
the output is further based upon the signal indicative of the temperature.

13. (Currently Amended) The welding machine of Claim 9~~10~~, further comprising wherein:
the signal indicative of activation of a wire feed motor further comprising:
is generated at a wire speed sensor in communication with the input, the wire feed sensor being configured to sense a speed of the wire feed~~the temperature of the switch~~.

14. (Original) The welding machine of Claim 9, wherein the switch is a transistor.

15. (Original) The welding machine of Claim 14, wherein the transistor is a field effect transistor.

16. (Currently Amended) The welding machine of Claim 9, wherein the logical signal is received at the switch output is configured to pulse-width modulate the electrical current flowing from the power source to the wire conductor.

17. (Currently Amended) A method for welding with an arc welding wire feed machine, the method comprising:

receiving a signal indicative of depression of a trigger;
receiving a signal indicative of feeding a wire electrode at a welding arc;
receiving a signal indicative of a current volume at the welding arc;

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conducting an electrical current from a power source to a drain of at least one transistor; and

energizing a gate of the at least one transistor, in response to the signals indicative of depression of the trigger, feeding the wire electrode, and the volume of current at the welding arc, the transistor configured to admit an electrical current from the power source to a wire conductor in response to energizing the gate.

18. (Currently Amended) The method of Claim 17, further comprising:

~~monitoring a magnitude of the electric current;~~

comparing the magnitude signal indicative of the volume of current to a reference value; and

de-energizing the gate when the magnitude exceeds the reference value.

19. (Currently Amended) The method of Claim 18, further comprising:

re-energizing the gate when the magnitude signal indicative of the volume of current is less than the reference value.

20. (Original) The method of Claim 17, further comprising:

monitoring a magnitude of a temperature of the at least one transistor;

comparing the magnitude to a reference value; and

de-energizing the gate when the magnitude exceeds the reference value.

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